

REMARKS/ARGUMENTS

Claims 1-12 and 14-17 are pending in this application. Claim 13 has been canceled.

Claim 1 has been rejected for obviousness over Baumann (5,583,334). In the Office Action, it was acknowledged that Baumann does not disclose a light guide arranged outside the monitoring region for the transmission of the synchronization signal between the transmitter and the receiver. However, it was viewed obvious to provide such a light guide because “The synchronization of the light transmitters and receivers can take place over a connecting line between the light transmitter row and the receiver row”, as stated in column 1, lines 18-21 of Baumann. Furthermore, placing the light guide outside the monitoring region was deemed to be within the purview of a person skilled in the art.

Claim 1 recites in relevant parts that “at least one light guide is provided which connects the transmitter unit with the receiver unit for the transmission of the synchronization signal”.

Baumann nowhere mentions to use a light guide for the transmission of the synchronization signal.

The referred-to passage in column 1, lines 18-21 must be considered with the next sentence to fully understand the disclosure in lines 18-21 of column 1.

Column 1, lines 18-28 of Baumann state:

The synchronization of the light transmitters and light receivers can take place over a connecting line between the light transmitter row and the light receiver row (DE 24 09 113 B2) and also through a suitable coding of the light transmitter pulses to which the light receivers are matched. A synchronization of light transmitters and light receivers without an electrical connecting line between the light transmitter and light receiver rows is also possible by providing a synchronization pause between the light pulses of the last and first light transmitters of the light transmitter row (DE-OS 38 03 033). (underlining added)

As the underlined wording in the portion of Baumann quoted above demonstrates, the “connecting line” referred to in column 1, line 20 is an electrical connecting line as clarified in column 1, lines 24-25 of the above-quoted portion of Baumann.

The Baumann patent nowhere mentions use of light guides or why light guides could or should be substituted for the electrical connecting line discussed in column 1 of Baumann. Thus, Baumann provides no motivation to one of ordinary skill in the art to use light guides in favor of electrical connecting lines.

Further, as mentioned in paragraph 0008 of the Substitute Specification, a light guide is easily retrofitted to an existing light grid by connecting the two ends of the light guide with the light emitter and the light receiver, respectively. This greatly simplifies retrofitting existing light grids as compared to retrofitting them with electrical connecting lines, as is disclosed by Baumann, because this would require suitable electronics to supply and detect or recognize synchronization signals. In addition, electrical connecting lines are subject to cross-talk that might interfere with the synchronization signal—a problem which does not occur when using a light guide as required by claim 1.

As stated in *In re Linter*, 458 F.2d 1013, 1016; 173 USPQ 560, 562 (CCPA 1972), the court held with regard to obviousness rejections of claims over the prior art:

In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination or other modification.

There is no motivation for one of ordinary skill in the art to replace the electrical connecting lines of Baumann with light guides for the transmission of synchronization signals. Baumann is silent with regard to the use of light guides for transmitting synchronization signals. Yet, as explained above, light guides provide significant advantages over the use of electrical connecting lines, which was never recognized by Baumann and is not mentioned therein. Thus, one of ordinary skill in the art having Baumann before him would find no teaching in Baumann

that is “sufficient for one of ordinary skill in the relevant art ... to make the proposed substitution”, as held in *In re Linter*.

Accordingly, claim 1 is not obvious over Baumann. Claims 2 and 5, which depend from claim 1, are directed to specific subfeatures of the present invention which are independently patentable over Baumann. These claims are further allowable because they depend from allowable parent claim 1.

Claims 6-8 and 11-12 were rejected for anticipation by Baumann, which was viewed as disclosing all elements of these claims, including the limitation that “the synchronization signal is transmitted during operation from the transmitter unit [13] to the receiver unit [14] via changing pairs of light transmitters and light receivers [e.g. 11₂ with 12₂; See Abstract, lines 8-14; Specification, col. 3, lines 4-18 and 39-41] associated with one another” (claim 1). Independent claim 12 was rejected on the same basis with the same observations concerning the transmission of the synchronization signals via changing pairs of light transmitters and light receivers.

The passages of Baumann relied on in the anticipation rejection of independent claims 6 and 12, and in particular the transmission of the synchronization signal via changing pairs of light transmitters and receivers, are not disclosed. The cited passages describe that the light transmitters and the associated light receivers are individually activated cyclically one after the other, and that the light beam which is emitted is sufficiently large to reach not only the associated light receiver, but also the neighboring light receivers. Together with a suitable evaluation circuit, this makes it possible to identify a defect light transmitter and/or light receiver.

The abstract fully confirms this and states that “a differentiation is made between an obstacle introduced into the protective field (26) and a defect light transmitter (11_i) and/or light receiver (12_i)”.

Column 3, lines 4-18 of Baumann teach to provide control apparatus that “cyclically transmit light pulses” and, upon “activation by the control apparatus 27, a divergent

light beam 19 [is transmitted] through the protected field 26 to a vertical row 14 of light receivers” The divergence of the light beam is sufficiently large so that it reaches neighboring light receivers “and can there trigger a reception signal provided the light receiver considered is activated together with the light transmitter”.

This teaching of Baumann provides no suggestion to one of ordinary skill in the art to send synchronization signals via a light guide between the transmitter and the receiver.

Baumann explains in column 1, lines 18-28 that the synchronization of the light transmitters and light receivers can take place via an electrical connecting line by suitably coding the light transmitter pulses to which the light receivers are matched, or by providing a synchronization pulse between the light pulses of the last and first light transmitters of the light transmitter row.

Further, column 4, lines 21-23 of Baumann teach that the individual light pulses include a “special coding” to synchronize the light transmitters and receivers.

There is no mention in column 4, lines 21-23, or anywhere else, and therefore no disclosure to transmit the synchronization signal “from the transmitter unit to the receiver unit via changing pairs of light transmitters and light receivers associated with one another” (claim 6) or that “a control unit is provided for the transmission of the synchronization signal from the transmitter unit to the receiver unit via changing pairs of light transmitters and light receivers associated with one another” (claim 12).

In Baumann, the synchronization signal is a “special coding of the individual light pulses” (column 4, lines 21-22), which is not changed via “pairs of light transmitters and light receivers”, as recited in independent claims 6 and 12.

In Baumann, each individual light pulse includes a special coding to effect “the synchronization between the row of light transmitters 13 and the row of light receivers 14, when a light pulse has to be received from the associated light transmitter 11;” (column 4, lines 22-25). Thus, Baumann does not disclose to transmit the synchronization signal “via changing pairs of

light transmitters and light receivers". Baumann only discloses to individually code each light pulse so that it can be recognized and used to synchronize the operation of the light grid.

Accordingly, Baumann does not anticipate independent claims 6 and 12.

Claims 14 and 16 further define the method recited in their respective parent claims 6 and 12 that "the synchronization signal is transmitted only once between a light transmitter and an associated light receiver during an operating cycle of the light grid". In contrast, in Baumann the "light receivers 12_i are clocked in the same rhythm and know, as a result of the special coding of the individual light pulses, and the synchronization between the row of light transmitters 13 and the row of light receivers 14, when a light pulse has to be received from the associated light transmitter 11_i" (column 4, lines 21-24; underlining added). Baumann does not disclose or in any form suggest a method in which the synchronization signal is transmitted only once during an operating cycle.

Along the same lines, claims 15 and 17 recite that the associated pairs of light transmitters and light receivers continue to be successively activated during an operating cycle after the transmission of the synchronization signal. As the foregoing quotation from Baumann demonstrates, each light pulse carries a synchronization signal in the form of a special coding. As a result, Baumann does not suggest claims 15 and 17.

Claims 7, 8 and 11 are directed to specific features of the present invention that are independently patentable. These claims are further allowable because they depend from allowable parent claim 6.

Application No. 09/900,000
Amendment
Reply to Office Action of May 18, 2005

PATENT

CONCLUSION

In view of the foregoing, applicants submit that this application is in condition for allowance, and a corresponding notification at an early date is requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 576-0200.

Respectfully submitted,


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